



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/973,557	10/10/2001	W. Monty Reichert	2455.3US	7868
24247	7590	05/02/2007	EXAMINER	
TRASK BRITT P.O. BOX 2550 SALT LAKE CITY, UT 84110			RAMILLANO, LORE JANET	
ART UNIT		PAPER NUMBER		
1743				
MAIL DATE		DELIVERY MODE		
05/02/2007		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/973,557	REICHERT ET AL.	
Examiner	Art Unit		
Lore Ramillano	1743		

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 05 February 2007.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-25 and 64-117 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) 11,12 and 64-82 is/are allowed.

6) Claim(s) 1-10,13-25 and 83-117 is/are rejected.

7) Claim(s) 11 and 12 is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 10 October 2001 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-89)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date

4) Interview Summary (PTO-413)

Paper No(s)/Mail Date. _____.

5) Notice of Informal Patent Application

6) Other: _____.

DETAILED ACTION

1. In applicant's reply filed on 2/5/07, applicant amended claims 9 and 12; cancelled claims 26-63; and added new claims 64-117.

Response to Amendment

Claim Rejections - 35 USC § 112

2. The rejection of claims 7 and 9-12 under 35 U.S.C. 112, second paragraph, is withdrawn.

Allowable Subject Matter

3. The indicated allowability of claims 13, 18-20, and 23 are withdrawn in view of the newly discovered reference(s) to Lukosz and Groger et al. Rejections based on the newly cited reference(s) follow.

Prior art Rejections

4. The rejections over the prior art are maintained, which are indicated below.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting

directly or indirectly from an international application filed before November 29, 2000.

Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. **Claims 1-5, 7, 8, 15-17, 21, 22, 24, and 25 are rejected under 35 U.S.C. 102(b)** as being anticipated by Tiefenthaler et al. ("Tiefenthaler," US 5071248).

In Fig. 1, Tiefenthaler discloses a composite waveguide comprising: a substrate (2) comprising a first optical material of refractive index n_1 and having a first planar surface and an opposite second surface, and a waveguide film (1) comprising a second optical material having a refractive index n_2 which is greater than refractive index n_1 , and is disposed on the first planar surface of the substrate (column 4, lines 4-8); capture molecules (i.e. column 5, lines 3-64), a light source (column 6, lines 59-62), and a light detection device (i.e. D1, Fig. 2).

Tiefenthaler further discloses a prism (Fig. 3, column 7, lines 63-65); a diffraction grating (i.e. Fig. 3, column 7, lines 63-65); a waveguide coupler (i.e. Fig. 3, column 7, lines 63-65); a first optical material comprising silicon dioxide and quartz (glass substrate, column 3, lines 62-64); and a second optical material comprising silicon dioxide (column 3, lines 65-68).

7. **Claims 1-10, 14, 15, 17, 21, 22, 24, and 25 are rejected under 35 U.S.C. 102(b)** as being anticipated by Flanagan et al. ("Flanagan," US 5081012).

In Fig. 10, Flanagan discloses a composite waveguide comprising: a substrate (95) comprising a first optical material of refractive index n_1 and having a first planar surface and an opposite second surface, and a waveguide film (94) comprising a second optical material having a refractive index n_2 which is greater than refractive

index n_1 , and is disposed on the first planar surface of the substrate; capture molecules, a light source (laser, 91), and a light detection device (98) (column 6, line 60-column 8, line 39).

Flanagan further discloses a prism (Fig. 10, column 8, lines 6-19); a diffraction grating (Figs. 9a, 9b, column 7, lines 3-15); a waveguide coupler (Fig. 10, column 8, lines 6-19); an input waveguide (20) and a spacing layer (26) (column 5, lines 27-32); waveguide has a thickness of at least about 0.1um (column 2, lines 1-6); and a first optical material comprising silicon dioxide and quartz (glass substrate, column 6, lines 63-66).

8. **Claims 1 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Lukosz (US 5120131).**

In Fig. 1-5, Lukosz discloses a composite waveguide comprising: a substrate (2) comprising a first optical material of refractive index n_1 and having a first planar surface and an opposite second surface, and a waveguide film (1) comprising a second optical material having a refractive index n_2 which is greater than refractive index n_1 , and is disposed on the first planar surface of the substrate, whereby the substrate has a thickness of at least 10 μ m (i.e. column 1, lines 11-24; column 8, lines 46-47); capture molecules (i.e. column 5, lines 40-69); a light source (i.e. column 2, lines 35-36), and a light detection device (10).

9. **Claims 1-4, 8, 14, 15, 21, 22, 24, and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Attridge (US 5344784).**

Attridge discloses a composite waveguide comprising: a substrate (4, Fig. 1) comprising a first optical material of refractive index n_1 and having a first planar surface

and an opposite second surface, and a waveguide film (5, Fig. 1) comprising a second optical material having a refractive index n_2 which is greater than refractive index n_1 , and is disposed on the first planar surface of the substrate (column 1, lines 27-45); capture molecules (column 4, lines 63-column 5, line 20), a light source, and a light detection device (column 5, lines 27-40).

Attridge further discloses an optical coupling element (i.e. prism or a grating coupler, column 5, lines 27-40); a waveguide film having a thickness of at least about 0.1 um (i.e. column 4, lines 25-42); and a first optical material comprising silicon dioxide or magnesium fluoride (i.e. column 2, lines 1-12).

10. **Claims 1-3, 8-10, 14-25, 83-85, 90-105, and 110-117** are rejected under 35 U.S.C. 102(e) as being anticipated by Groger et al. ("Groger," US 5577137).

In Figs. 1-3, Groger discloses a composite waveguide comprising: a substrate (9) comprising a first optical material of refractive index n_1 and having a first planar surface and an opposite second surface, and a waveguide film (11) comprising a second optical material having a refractive index n_2 which is greater than refractive index n_1 , and is disposed on the first planar surface of the substrate (column 8, lines 44-46); a plurality of different types of capture molecules associated with the waveguide film (i.e. column 4, lines 19-25); a sample reservoir adjacent to a surface of the waveguide film (i.e. column 4, lines 19-25), a light source (5, i.e. laser, column 1, lines 65-68); and a light detection device (i.e. charge-coupled device, column 2, lines 6-11).

Groger further discloses an optical coupling element (i.e. column 7, lines 32-36), which comprises a waveguide coupler, an input waveguide and a spacing layer (i.e. column 7, line 66 to column 8, lines 19); a waveguide film having a thickness of at least

about 0.1 μ m (i.e. column 2, lines 32-41); a first optical material comprising silicon dioxide, quartz, and fused silica (i.e. column 5, lines 58-59); and a second optical material comprising at least silicon dioxide (i.e. column 2, lines 32-48).

Claim Rejections - 35 USC § 103

11. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
12. **Claims 86-89 and 106-109** are rejected under 35 U.S.C. 103(a) as being unpatentable over Groger in view of Koester (US 3449037).

While Groger discloses having holographic optical elements and beamsplitters, Groger does not specifically disclose having a prism and a diffraction grating. Koester discloses a light-dispersing arrangement comprising a diffraction grating and a prism arranged in proper alignment so as to function together (i.e. column 9, lines 7-12). It would have been obvious to a person of ordinary skill in the art to modify Groger by having Koester's light-dispersing arrangement because such arrangement would result in producing a greater spectral distribution while offsetting the deviations (i.e. column 9, lines 16-25).

Allowable Subject Matter

13. Claims 11-12 and 64-82 are allowed.
14. Claims 11-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
15. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record (Tiefenthaler) fails to teach or fairly suggest an input

waveguide comprising an optical material having a refractive index n_3 and a thickness of between 0.5 mm and about 5mm and a spacing layer comprising an optical material having a refractive index n_4 , where $n_4 < n_2$ and $n_4 < n_3$, the spacing layer having a thickness selected to optimize evanescent coupling of light from the input waveguide into the waveguide film, in combination with the remaining features and elements of the claimed invention.

Response to Arguments

16. Applicant's arguments filed 2/5/07 have been fully considered but they are not persuasive.

In response to applicant's argument that Tiefenthaler does not expressly or inherently describe, "a light detection device positioned to collect light emitted from a surface of [the] waveguide film," examiner disagrees. Tiefenthaler does expressly disclose detectors (light detection device) positioned to collect light emitted from a surface of the waveguide film in Figs. 2-4, 7, 8, and 12, and in column 7, line 65 to column 8, line 2, for example. Furthermore, the language "to collect light emitted from a surface of the waveguide film," represents a recitation of the intended use of the claimed invention, which must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Thus, Tiefenthaler reads on this limitation.

In response to applicant's argument that Flanagan does not expressly or inherently describe, "a light detection device positioned to collect light emitted from a surface of [the] waveguide film," examiner disagrees. Flanagan does expressly disclose

detectors (light detection device) positioned to collect light emitted from a surface of the waveguide film in Fig. 10, and in column 8, lines 22-23, for example. Furthermore, the language "to collect light emitted from a surface of the waveguide film," represents a recitation of the intended use of the claimed invention, which must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Thus, Flanagan reads on this limitation.

In response to applicant's argument that Attridge does not expressly or inherently describe an apparatus in which fluorescent light is emitted from the surface of the waveguiding layer is detected, examiner disagrees. Attridge does expressly disclose light being emitted from a surface of the waveguide film in column 4, lines 56-59, for example. Furthermore, the language "to collect light emitted from a surface of the waveguide film," represents a recitation of the intended use of the claimed invention, which must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Thus, Attridge reads on this limitation.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lore Ramillano whose telephone number is (571) 272-7420. The examiner can normally be reached on Mon. to Fri.

Art Unit: 1743

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Lore Ramillano
Examiner
Art Unit 1743

Jill Warden
Jill Warden
Supervisory Patent Examiner
Technology Center 1700